MEDIATION ROLE OF RESOURCE TRANSFORMATION CAPABILITIES IN KNOWLEDGE MANAGEMENT POTENTIAL AND QUALITY MANAGEMENT PRACTICES AMONG SMES

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Abstract

The purpose of this paper is to investigate the mediation effect of resource transformation capabilities on the relationship between knowledge management potential and quality management practices among SMEs. The study adopts a cross-sectional survey to collect data from 210 units used to carry out the mediation investigation. Correlations, regressions and a Med-Graph were used in the analysis. Both knowledge management potential and resource transformation capabilities were found to have direct effects on quality management practices and resource transformation capabilities partially mediate the relationship between knowledge management potential and quality management practices among SMEs. The study scope was limited to the supply side of the firm, which focused on organisational value chain activities and ignored the end users of the product, the customers. However, operations managers in SME sub-sector should consider resource transformation capabilities as an entry point for knowledge management potential to achieve sustainable quality management practices. The study engenders indicative insights in the SME subsector, a gateway for employment generation, sustainable household incomes and much sought Gross Domestic Product generation through knowledge management potential, resource transformation capabilities and quality management practices.

Keywords:

Uganda, SMEs, Quality Management Practices

1. INTRODUCTION

The business environment has become increasingly competitive and this has compelled Small and Medium Sized Enterprises (SMEs) to adopt and modify sustainable quality management practices required to deliver quality products that meet the changing needs of the customers. Today, customers have unlimited access to information that informs their choice of products they consume. This may be largely attributed to globalization and use of modern Information, Communication and Technological (ICT) applications that ease information search. Therefore, to sustain operations in the volatile environment, firms ought to empower their human resources with knowledge and skills to support the transformation of the available resources into quality products. For SMEs in developing countries which are largely resource constrained, knowledge management schemes contribute to better understanding of the market environment in which they operate.

Quality management practices among SMEs have been studied widely in different contexts; developed and developing economies. Generally, they are conceived as a set of activities adopted and modified by managers to improve firm operations necessary to meet customer expectations [1]. Knowledge management potential is conceptualized as organizational ability to generate, absorb and integrate novel ideas into a firm's core operations system [2]. Resource transformation capabilities are perceived as organizational efforts that involve re-modification of the current resources into unique assets to deliver customer desired products [3] [4].

Some studies have linked the inability for SMEs to satisfy quality requirements of their customers to inadequate management control systems [5]; operational inadequacies [6] and resource transformation deficiency [7]. Few empirical works have focused on mediation studies involving knowledge management potential and quality management practices. However, [8] used business process capability and innovativeness respectively as mediators between knowledge management and firm performance. Therefore, quite few studies have done research works on the mediation role of resource transformation capabilities between knowledge management potential and quality management practices among SMEs; which we endeavored to examine.

SMEs are crucial in stimulating economic growth and development through employment creation, Gross Domestic Product support and generation of household incomes [9]. The study scope focused on SMEs that carry out value addition in their operations activities across processing, manufacturing and service sub-sectors. According to [10], SMEs are predominantly independent establishments that employ relatively fewer people ranging between 50-249 and 250-499 for Small and Medium Sized firms respectively. However, [9] conceptualizes SMEs as those firms formal or informal that employ between 5-50 and 51-100 in respect of Small and Medium sized firms. We adopted [9] Policy guideline in categorizing firms.

There rest of this paper is organized as follows: the next section focuses on the theoretical background and review of related literature, development of the conceptual framework, operationalization and measurement of variables; followed by the research methodology, findings and discussion. The final section provides conclusion, implications and limitations of the study.

2. THEORETICAL BACKGROUND AND RELATED LITERATURE

Quality Management Practices are anchored in the theory of continuous improvement by Kaizen as cited [11]. The theory posits that organizations continually endeavour to advance their operational levels despite their current achievements in view of corporate strategic objectives. Such improvements are required in operations, systems, structures and activities to support long term organisational strategy [11]. The theory also emphasizes the need

for firms to invest in knowledge management schemes to support firm operations in a dynamic environment. To achieve long-term quality goal, [12] advocate for organizational wide employee training, empowerment, well-coordinated cross functional teams, supplier quality management and process controls to deliver customer desired products. Hence, efforts to transform resources into inimitable capabilities are crucial to sustain quality management effort.

2.1 KNOWLEDGE MANAGEMENT POTENTIAL AND QUALITY MANAGEMENT PRACTICES

SME managers need to establish a conducive environment that supports employees' search for better methods of work to sustain firm survival and growth [5]. In dynamic environments, firms need to create and propagate knowledge management schemes to sustain provision of products that meet the changing quality needs of the customers [13]. Integrative Knowledge management initiatives support organizational quality management systems to create unique products [14]. Training human resources in skill development program fits well within organizational wide quality management agenda [15]. Consequently, social reality suggests that this is a knowledge economy and firms ought to keep in touch with developments in the market place for survival.

SMEs in developing countries are largely resource constrained and should endeavor to benchmark relatively bigger firms for sustainable knowledge generation, absorption & integration [16]. Generally, they lack financial, technical and managerial support needed to sustain operations in a global environment. Hence, adoption and integration of external knowledge improve SMEs' ability to establish quality planning, control and improvement mechanisms for proper quality management systems [5]. Therefore, knowledge sharing between firms enables SMEs to adopt industry good practice required to deliver customer quality requirements to meet market expectations.

Strategic knowledge management is associated with creativity which spurs the development of quality products in line with market expectations [16]. In view of the above, knowledge management is synonymous with value creation in firm products [17]. To achieve the above, it is imperative for firms to integrate knowledge into the organizational quality management systems in a more creative manner [16]. Therefore, creativity; a product of strategic knowledge management is a precursor to attaining organizational competitive priorities of a firm in the long run. Deriving from the above, we hypothesize that;

H_1: there is a positive and significant relationship between knowledge management potential and quality management practices among SMEs in Uganda.

2.2 KNOWLEDGE MANAGEMENT POTENTIAL AND RESOURCE TRANSFORMATION CAPABILITIES

Knowledge acquisition and integration initiatives provide the necessary support for SMEs in nurturing firm resources required to deliver quality products [18]. [13] Emphasize that novel ideas that are internally generated rejuvenate product development efforts through resource transformation initiatives. Knowledge management synergies are crucial in overcoming challenges relating to resource deployment deficiencies [19]. In relation to

the above, firms that integrate knowledge successfully demonstrate considerable degree of resource transfiguration capabilities [13]. Henceforth, skill enhancement is a perceived predictor of resource conversion proficiency of a firm into unique products that meet customer needs in a changing environment.

Knowledge related decisions sustain resource transformation competencies associated with SMEs [18]. [20] Found that effective knowledge management schemes are a vital resource for success in building firm capabilities. Creative oriented firms generate fresh insights alongside existing knowledge required to adopt worldwide resource transformational strategies [21]. Knowledge adoption is a valuable resource that enables staff development necessary for pioneering resource transfiguration efforts [20]. Therefore, knowledge based operating environments are benchmarks for resource configuration initiatives among SMEs

Scientific knowledge demonstrated through development of new processes provides real time responses to changing customer needs [20].The knowledge based view of a firm suggests that operational capabilities coupled with firm's tacit knowledge potential determine firm success [21]. Well planned training programs provide a resourceful platform for creative efforts [20]. Integrating ingenious knowledge into existing organizational information base supports systems improvement [20]. Consequently, proper knowledge management systems are synonymous with improvements in product configurations. From the above review, we envisage that;

H_2: There exists a positive and significant relationship between knowledge management potential and resource transformation capabilities among SMEs.

2.3 RESOURCE TRANSFORMATION CAPABILITIES AND QUALITY MANAGEMENT PRACTICES AMONG SMES

SMEs are capable of sustaining and maintaining the quality needs of their customers by transforming the current firm resources into unique products that meet market expectations [22]. Relatedly, firm innovations are synonymous with value creation in products that extent customer satisfaction levels [23]. Similar observations by [24] indicate that transformations in business processes spur continuous improvement quality agenda for SMEs. We therefore observe that organizations that perpetually upgrade their systems are most likely to achieve multiple advantages in form of sustainable product quality, productivity and dependability.

Well executed innovative plans are associated with successful development of quality products [23]. A stakeholder model of continuous improvement by [25] indicates that incremental innovative efforts advance quality products at lower costs due to reduced reject rates. Similarly, process improvement capabilities of a firm provide for mechanisms that spur product performance measures including quality [26]. In view of the above empirical works, resource transformation efforts support manufacturing flexibility which allows greater scope of product range.

Changing market conditions have compelled firms to continuously upgrade their product value to customer satisfaction through business networks [22]. Resource transformation in a dynamic environment supports organization's endeavors to

provide their customers with better quality products in unpredictable environment [22]. A study by [27] postulates that improvements in operational efficiency argument the potential of SMEs to achieve multiple synergies of improved quality, delivery and competiveness. From the review, we perceive that;

H_3: Resource transformation capabilities positively and significantly related to quality management practices among SMEs.

2.4 THE MEDIATION ROLE OF RESOURCE TRANSFORMATION CAPABILITIES

Knowledge management is closely associated with firm resource transformation know-how required to achieve strategic goals [16]. Knowledge and skills management are quite embedded in resource configuration processes in search for quality products [28]. Networking, innovativeness and knowledge transfer promote implementation of quality management programs [28]. Accordingly, it is servicing to say that organizational knowledge base eases the creative processes desired for quality improvement in a competitive environment.

Knowledge management has been closely associated with resource alignment in quality management [29]. In respect, knowledge management processes spur resource redeployment efforts for better quality products [30]. Sharing similar observations, [31] posits that knowledge and skills acquired through experiential leaning are positively linked to quality products. A study by [32] reveals that skill orientation of the manager determines a firm's resource management capacity to achieve corporate strategy. From the foregoing, it is likely that,

H_4: Resource transformation capabilities significantly mediate in the relationship between knowledge management and quality management practices among SMEs.

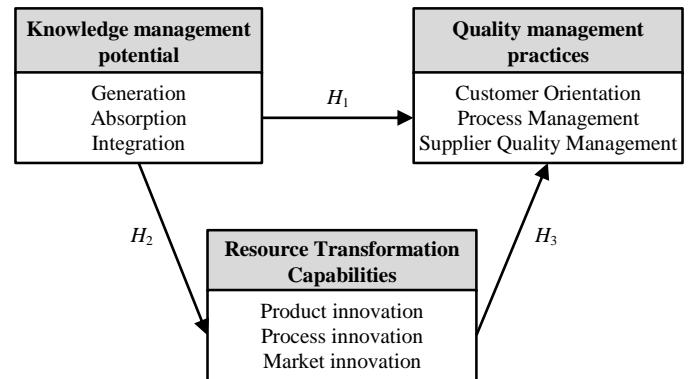In view of theory and literature, we develop a conceptual framework presented in the Fig.1.

Fig.1. The Conceptual Framework

2.5 OPERATIONALIZATION AND MEASUREMENT OF VARIABLES

This is concerned with reduction of phenomenon into representative measurable factors. The study made inference to the empirical works of previous scholars to operationalize the variables that include: quality management practices, knowledge management potential and resource transformation capabilities into measurable constructs. This is summarized in the Table.1.

Table.1. Operationalization and Measurement of Variables

Variable	Dimensions	Definitions	Sample items	Source
Quality management practices	Customer orientation	Organizational efforts towards aligning firm processes to create customer value.	"Accurate information to customers, product benefits and empowering them to make right decisions"	[33]
	Process control	Precautionary approaches to quality management intended to achieve consistent results	"Process documentation, monitoring, use of instruction manuals and supplier quality checks"	[34]
	Supplier quality management	A set of activities supply organizations should comply with to ensure quality supplies	"Supplier relationship management, maintenance of long term relationships, provision of timely feedback and regular compliance checks" *Reliability* (α=0:781); *Validity* (TVE = 62.17%).	[34]
Knowledge management potential	Knowledge generation	Initiatives firms undertake to increase the skill capability of human resources in the organization [35].	"Understanding customer needs, market developments, supply needs and retrieval of stored knowledge.	[2]
	Knowledge absorption	The ability of an organization to integrate knowledge in operations processes [36].	"Communication of acquired knowledge, knowledge sharing, exchange and assimilation into existing knowledge base"	[2]
	Knowledge integration	Amalgamation external knowledge within established systems to support operations [37].	"Matching knowledge with operation's needs, firm efficiency, and development of new products and solving operational challenges. *Reliability* (α=0:717); *Validity* (TVE = 72.39%).	[2]

Resource Transformation Capabilities	Creativity	A range of activities involving inventive efforts to transform products, processes and markets in view of customer expectations [38].	"Search for creative solutions, acceptance of frequent changes in areas of responsibility, risk acceptance, modification of existing programs, doing things differently, up to date delivery and creation of new ideas"	[39]
	Networking	A process of establishing business links with eternal stakeholders to enhance firm performance [40]	"Creation of partnerships, collaborations, coordination, alliance building, creation of potential partners and business networks".	[41]
	Innovativeness	Taking advantage of available resources to introduce novel products for existing and prospective customers [42].	Rate of new product introductions, customer perception of new products, uniqueness of new products, product competitiveness, success rate in new product launch, technological innovations and improvement in business processes". *Reliability* (α= 0.813); *Validity* (TVE =69.5%).	[43]

3. METHODOLOGY

3.1 PHILOSOPHICAL ORIENTATION

This study was guided by assumptions of positivistic research paradigm that examine the process by which social researchers come to understand reality [44]. Positivists hold that reality is absolute, exists, tangible; and social researchers come to discern it through data collection, measurement, analysis and interpretation based on well-constructed research instruments [45]. Consequently, positivistic epistemology encompasses objective perspectives which researchers can test by use of relevant statistics. The approach is largely deductive; focusing on testing primary data to determine whether the results support the study hypotheses [45]. Quality concept being partially objective based on guidelines by regulatory houses, the above philosophical approach sufficiently guided the research process.

3.2 RESEARCH DESIGN

We adopted a cross-sectional and descriptive survey research designs which assume a deductive approach; synonymous with hypotheses and relationship testing between variables [46] [47]. A cross-sectional design was quite sufficient because it caters for research studies that analyses a particular phenomenon at a point in time [45].

3.3 POPULATION AND SAMPLE

The study population comprised of 460 SMEs in Uganda; from the central and eastern regions 60% and 40% respectively [9]. We selected the above two regions because they have the highest rate of SME concentration in Uganda. The study conceptualized firm category by employment levels; Small firms (5- 50) and medium (51-100) employees [9]. Due to relatively high mortality rates of SMEs in Uganda, we identified those firms that had been in existence for at least five years. The period was perceived sufficient for firms to demonstrate considerable capabilities to acquire and integrate knowledge, configure firm resources to build sustainable quality management practices that support corporate strategy. The sample size was determined on the basis of [48] Eq.(1) as follows;

$$S = [X^2 NP(1-P)] \div [\{d^2(N-1)\} + \{X^2 P (1-P)\}] \qquad (1)$$

which is anchored at 95% confidence level and .05 error margin.

where,

S = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level. For 95% confidence level, the value is 3.841.

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

Subjecting the study population to the Eq.(1), a sample size (S=210) was determined.

3.4 SAMPLING PROCEDURE AND DESIGN

A total sample of 210 firms comprising of 126 and 84 units from the central and eastern regions respectively with regard to the population ratios. Basing on respective sampling frames, we used a simple random sampling technique to identify sample firms with the help of MS Excel random selector. However, our target respondents were either quality controllers or operations managers. Therefore, we used purposive sampling technique to identify respondents from the selected study firms. The purpose was to obtain a homogeneous sample and minimize on divergences in responses.

3.5 DATA COLLECTION

The unit of inquiry was an employee in operations function preferably operations managers or quality controllers because they occupy strategic positions in the operations function in particular and the organization in general [49]. An SME (firm) was the basic unit of analysis. We administered the instrument in two phases; first on the dependent variable; then the predictors and moderator after one week to control for common methods bias [50]. During the interval, there were no policy shifts within firms or by the external regulators to affect our data.

3.6 DATA MANAGEMENT

We conducted a pilot study to pretest and determine the instrument's validity, reliability and made improvements where necessary. The results from the pretest found the instrument reliable and valid as clearly shown in a couple of sub-sections that follow.

After data collection for the main study, we conducted manual data editing for accuracy and completeness. Out of 210 questionnaires that were received, we isolated and discarded 8 (eight) items that had glaring gaps of omissions. A total of 202 were usable representing 96.2% response rate. This was well above the average response rate of 56% established by [51] for paper based studies. We conducted data cleaning exercise using SPSS software in respect of missing values and outliers [52] purposely to optimize the predictive power, effect size and reliability of our data. Using descriptive statistics, some values were identified missing. Subjecting the data to Little's MCAR test, results indicated that data were missing completely at random (Sig. = .101). Therefore, we replaced the missing data using linear interpolation method [53].

4. ANALYSIS AND INTERPRETATION OF FINDINGS

We sought to determine the firm characteristics of the study sample and results are illustrated in the Table.2.

Table.2. Firm Characteristics

Location of firm by region in Uganda		
	Frequency	Percent
Central	118	58.4
Eastern	84	41.6
Total	202	100
Nature of business		
	Frequency	Percent
Processing	26	12.9
Manufacturing	74	36.6
Service	102	50.5
Total	202	100
Approximate number of employees		
	Frequency	Percent
5-50	122	60.4
51-100	80	39.6
Total	202	100
Years the organization has been in existence		
	Frequency	Percent
5-10	73	36.1
11-15	87	43.1
16-20	23	11.4
Over 20	19	9.4
Total	202	100
Number of branches		
	Frequency	Percent
None	99	49
One	57	28.2
Two	22	10.9
Three	9	4.5

Over Three	15	7.4
Total	202	100
Tick the quality management practice(s) commonly used by your firm		
	Frequency	Percent
Supplier quality management	52	25.7
Process control	68	33.7
Quality certification	82	40.6
Total	202	100

Most firms, (58.4%) were located in the central region and (41.6%) in the eastern. This is probably due to relative stable market conditions for firm products since the central region hosts Kampala; the Central Business District. Service firms represented (50.5%) compared to manufacturing and processing firms (49.5%) combined. This is in line with [10] which reveals that service firms are increasingly replacing sister manufacturing and processing firms. Small scale firms dominate (60.4%) compared to Medium (39.6%). This is perhaps is explained by perpetual resource constraints experienced by the SME sub-sector as earlier noted. Most firms had no branch (49%) and this may be attributed to their small nature (5-10) employees. The majority of firms (43.1%) had been operating in the sub-sector between 11-15 years demonstrating ability to apply relevant quality management practices in the SME-sub-sector. The majority of the firms (40.6%) rely on quality standards established by quality certification houses. This may be due stringent controls emphasized by the regulatory bodies.

Pearson two tailed correlations test in the Table.3 was performed to establish whether or not associations existed between variables as postulated in the empirical literature [54]. In this study, zero order correlation was adopted for the above purpose and the results are indicated in the Table.3.

Table.3. Zero Order Correlation

	Mean	Std. Deviation	1	2	3
Quality management practices	4.8524	0.55017	-		
Knowledge management potential	4.6902	0.57261	.435**	-	
Resource transformation capabilities	4.4967	0.65101	.477**	.450**	-

Note=202; **p <.01 (one-tailed)

We examined the relationship between knowledge management potential and quality management practices and results reveal a positive and significant relationship exists (r=.435; p<.01). This implies that changes in knowledge management potential are associated with changes in quality management practices. This finding supports H_1 which states that there is a positive and significant relationship between knowledge management potential and quality management practices among SMEs in Uganda.

Findings also reveal a positive and significant relationship between knowledge management potential and resource transformation capabilities (r =.450, $p<.01$). This implies that having the potential to manage knowledge is associated with building sustainable quality management practices. The finding accordingly supports H_2 that there is a positive and significant relationship between knowledge management potential and resource transformation capabilities among SMEs.

Further analysis of the associations indicate a positive and significant relationship between resource transformation capabilities and quality management practices (r = .477, $p<.01$). The implication of the result is that firms that have capabilities of transforming resources are associated with practices necessary to manage quality. The finding provides support to H_3 that resource transformation capabilities positively and significantly relate to quality management practices among SMEs in Uganda.

4.1 REGRESSION OF KNOWLEDGE MANAGEMENT POTENTIAL AND QUALITY MANAGEMENT PRACTICES WITH CONTROL VARIABLES

We use hierarchical regression analysis in respect of guiding procedures of [55] where group categories are entered simultaneously. In our study, we sought to find out the influence of control variables and the predictor on the outcome variable i.e. quality management practices [56]. The Table.4 represents the results of the analysis in respect of model 1 and model 2. The model coefficients are used as indicators to determine the contribution of each variable on quality management practices. The variance (R^2) explains the overall contribution of the variables in the final model. Results are shown in Table.4.

Table.4. Regression Analysis Results for KMP and QMP

Dependent variable: Quality management practices				
	Model 1		Model 2	
Variable	**B**	**β**	**B**	**β**
Constant	5.30		2.857	
Location by region	-0.08	-0.10	-0.06	-0.09
Nature of business	-0.06	-0.12	-0.02	-0.04
Approximate number of employees (size)	0.11	0.15*	0.13	0.19***
Years in existence Number of branches	0.01 0.02	0.01 0.06	-0.01 0.01	-0.01 0.02
KMP			0.46	0.58***
R^2	0.06		0.38	
Adj.R^2	0.04		0.36	
ΔR^2	0.06		0.32	
ΔF	2.90		125.60	
F	2.90		24.60	
Sig	.01		.000	
*Note: n= 202; *** p < .001; *p < .05; p > .05*				

Model 1 takes into account control variables; location of firm by region, nature of business, approximate number of employees, years the organization has been in existence and number of branches. Location of firm by region is not a significant predictor of quality management practices among SMEs in Uganda (β = -.10; $p>.05$). This may be partially explained by the fact that quality management practices cut across regions regardless of customer preferences. Similarly, the nature of business does not determine quality management practices among SMEs (β = -.12; $p>.05$). This implies that quality management efforts are necessary notwithstanding the nature or type of the sub-sector in which affirm operates.

Further analysis indicates that the number of years a firm has been in existence is not a significant predictor of quality management practices adopted by a firm in the SME sub-sector (β = .01; $p>.05$). This implies that regardless of firm experience, quality requirements are crucial for sustainable operations. Further analysis of the results show that the number of branches was found not to significantly predict quality management practices among SMEs in Uganda (β = .06; $p>.05$). Ideally, firms tend to maintain consistent quality across their branches as a symbol of identity. However, the number of employees is the only control variable that stood out as a significant predictor of quality management practices (β =.15; $p<.05$). Therefore, firm size is a determinant of the preferred quality management practice adopted by respective firms. Results indicate that the number of employees contributes a significant variation in quality management practices among SMEs in Uganda with a predictive power of 6% percent of the variation in quality management practices (ΔR^2 = .06; $p<.05$).

Model 2 takes into account knowledge management potential whose results indicate that it is a positive and significant predictor of quality management practices among SMEs in Uganda (β =.56; $p<.001$). Knowledge management potential accounts for a considerable variance of 32 percent o in quality management practices (ΔR^2 = .32; $p<.001$). This finding therefore extends further support for hypothesis H_1 which states that "there is a positive and significant relationship between knowledge management potential and quality management practices among SMEs in Uganda".

The model further indicates that the number of employees is a positive and significant predictor of quality management practices (β =.19; $p<.01$). However, Location of firm, the nature of business, the number of years a firm has been in existence and the number of branches were found not to be insignificant predictors quality management practices with the following respective beta coefficients and significance values (β = -.09; $p>.05$); (β = -.04; $p>.05$); (β = -.01; $p>.05$) and (β =.02; $p>.05$).

The overall model is statistically significant (sig. = .000, $p<.001$, F=24.59). Two components, one predictor and another control are significant predictors of quality management practices. They account for 38% of the variation in SME quality management practices in Uganda. In the final model, a unit change in knowledge management potential increases the level of quality management practices by 0.58 (β =.58***) and a unit change in firm size (number of employees) increases quality management practices by 0.19 (β =.19***). Thus, of the Total effect (38%), knowledge management potential explains 32% while firm size explains dismal 6% of the variation management practices respectively.

5. TESTING FOR MEDIATION

Mediation studies involve causal relationships that are perceived to occur between three variables. For mediation to exist, [57] propose three conditions which include: that variations in the intensities of the predictor account for the significant changes in the perceived mediator, whose variations account for significant modifications in the dependent variable; and if controlled, the hitherto significant relationship between the independent and dependent variables diminishes. We analyzed data using a regression model to determine whether the data satisfies the mediation conditions and results are presented in Table.5.

Table.5. Regression Analysis Results for the Mediation Effect of Resource transformation capabilities

Dependent variable			
	Resource Trans. capabilities	Quality Mgt. Practices	
Variables	Model 1	Model 2	Model 3
Knowledge management potential	.450***	-	-
Knowledge management potential	-	.435***	-
Knowledge management potential	-	-	.276***
Resource transformation capabilities	-	-	.353***
B	0.512	0.418	0.266
	-	-	0.298
SE b	0.072	0.061	0.064
	-	-	0.057

Note: n= 202, ***p<.001;

Model 1 is a regression of resource transformation capabilities (mediator) on knowledge management potential (predictor) and results show a positive and significant relationship between knowledge management potential and resource transformation capabilities (β = .450; p<.001). Results in model 2 is a regression of quality management practices (criterion variable) on knowledge management potential which also reveals existence of a positive and significant relationship (β = .435; p<.001). In the same vein, results in model 3 which is a regression of quality management practices on both knowledge management potential and resource transformation capabilities shows that whereas the predictive power of knowledge management potential reduces, both are positive and significant predictors of quality management practices (β = .276; p<.001); (β = .353; p<.001) respectively.

In final analysis, the results from overall regression support the conditions of a mediation to obtain according to [57]. Therefore, resource transformation capabilities mediate on the relationship between knowledge management potential and quality management practices among SMEs. To determine the significance of the mediation effect, we performed Sobel' z-test using Med-Graph (mediation testing) which involved computation of correlations coefficients of the three variables, their respective unstandardized regression coefficients as recommended by [58]. Results are presented in the Fig.2.

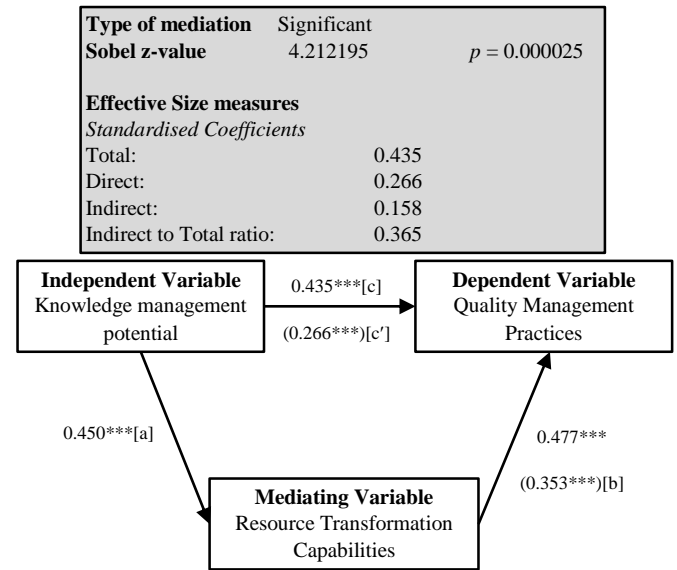| Type of mediation	Significant	
Sobel z-value	4.212195	$p = 0.000025$
Effective Size measures		
Standardised Coefficients		
Total:	0.435	
Direct:	0.266	
Indirect:	0.158	
Indirect to Total ratio:	0.365	

Fig.2. Mediation Effect of Resource Transformation Capabilities

Through the Med-Graph, we discover whether mediation is full or partial, Sobel' z-value is significant or not, and whether Baron and Kenny's mediation conditions are met or not. The results in Fig.2 reveal a significant mediation effect of resource transformation capabilities between knowledge management potential and quality management practices (z=4.21; p <.001). The significant z-value provides evidence of support for H_4 that resource transformation capabilities significantly mediate in the relationship between knowledge management potential and quality management practices among SMEs. However, if the change in the coefficient emerging from the third regression computations is significant like in our case, a partial mediation exists. Further, [58] observes that an index ratio below 50% denotes a partial mediation. The results indicate an index ratio of 36.5%, which signifies a partial mediation effect of resource transformation capabilities. This implies that variations in knowledge management potential affect variations in resource transformation capabilities which partially cause changes in quality management practices among SMEs. Hence, the mediator takes over part effect of knowledge management potential on quality management practices [57].

6. DISCUSSION OF RESULTS

In regard to H_1, the study results indicate that SMEs that understand customer needs and developments in product markets are capable of providing useful information to customers about product benefits which inform their consumption decisions. Besides, SMEs that encourage knowledge sharing, exchange and assimilation into existing knowledge base can document relevant work guidelines, initiate control checks and monitoring mechanisms which ensure consistency in final products. Additionally, SMEs that are capable of utilizing acquired knowledge to solve work flow challenges may improve firm efficiency and promote development of new products that meet customer value needs in a dynamic environment.

The above findings lend support to [15] who reveal that SMEs that have the ability to manage knowledge on sustainable basis are capable of achieving organizational wide quality

management agenda. In a related study, [17] emphasizes that customer needs and preferences keep changing overtime and organizations need to provide product value according to the client preferences. In contrast, [59] found a non-significant relationship between knowledge management potential and project quality management in the construction industry. This does not render our study findings doubtable since the respective sub-sectors require quite different operational needs.

The study further indicates a positive and significant relationship between knowledge management potential and resource transformation capabilities among SMES. This implies that firms that have capabilities to match operational needs with operational requirements are likely to develop unique and innovative products that meet customer anticipated needs. Besides; Knowledge sharing, exchange and assimilation into existing information base may trigger developments of new products and efficiencies in workflow activities. Additionally, efforts geared towards knowledge acquisition spur firm abilities to adopt modern technical applications that support business resilience in a competitive environment. The study findings are aligned to the works of [13] who found that knowledge acquisition, absorption and integration are positively associated with the ability of a firm to transform resources into unique capabilities. Therefore, an improvement in knowledge management potential of a firm is likely to cause positive changes in firm's human, technical and structural resources [60].

In support of H_3, resource transformation capabilities positively and significantly relate to quality management practices among SMEs. This implies that firms that constantly search for creative solutions by modifying work flow activities are likely to meet customer changing needs in the market. Besides, firms that endeavor to create and maintain business connections are better positioned to find reliable suppliers for cheaper and more consistent inputs that meet the quality needs of the organization. The above finding is in line with [22] who emphasize that optimal deployment of the current and prospective resources enhances the attainment of inimitable quality products necessary for firm survival. We can therefore confirm that SMEs that are capable of transforming their resources among other factors achieve sustainable quality management practices.

The major objective of the study was to establish the mediation role of resource transformation capabilities between knowledge management potential and quality management practices among SMEs. The study revealed a partial mediation effect. This infers that besides other factors; resource transformation capabilities of a firm demonstrated through creativity, networking and innovativeness enhance the predictive power of knowledge management potential on quality management practices in the Ugandan SMEs. Comparable findings by [8] indicate that business process capabilities partially mediate between knowledge management practices and firm performance. The partial mediation effect designates that the debate about the mediation effects between the predictor and the criterion variables is inconclusive.

7. CONCLUSIONS

7.1 POLICY IMPLICATIONS

- Government in conjunction with relevant institutions should develop a customized SME training manual that supports knowledge generation, absorption and integration into respective operations functions to augment generation of practical quality management practices.
- Development partners in conjunction with government should increase funding and improve the management of innovation funds to cover up-country areas where access to resources is a major constraint.
- Government should put in place an interaction forum that brings together multiple stake holders including Small and Medium Scale Enterprises, suppliers, technical and financial institutions to share challenges collectively and map possible interventions to support creativity efforts.

7.2 STUDY LIMITATIONS

- The study scope was limited to the supply side of the firm; which focused on organizational value chain activities and ignored the end users of the product, the customers. Involving customers in the study may generate different results altogether.
- Secondly, the study focused on Small and Medium Sized. Results may not be applicable to large scale firms since they are perceived to experience peculiar challenges in the environment.
- Although our study may be limited in scope, it provides immense research opportunities for the academia, practical options for the practitioners and useful policy alternatives for managers.

REFERENCES

[1] A.B. Jaafreh and A.Z. Al-abedallat, "The Effect of Quality Management Practices on Organizational Performance in Jordan: An Empirical Study", *International Journal of Financial Research*, Vol. 4, No. 1, pp. 93-109, 2012.

[2] T. Nguyet and Q. Nguyen, "Knowledge Management Capability and Competitive Advantage : An Empirical Study of Vietnamese Enterprises", Available at: https://epubs.scu.edu.au/theses/211/.

[3] D.J.Teece, "The Foundations of Enterprise Performance:Dynamic and Ordinary Capabilities in an Economic Theory of Firms", *Academy of Management Perspectives*, Vol. 28, No. 4, pp. 328-352, 2014.

[4] D.J.Teece, "Explicating Dynamic Capabilities: the Nature and Microfoundations of (Sustainable) Enterprise Performance", *Strategic Management*, Vol. 18, No. 7, pp. 509-533, 2007.

[5] P. Evangelista et al., "The Adoption of Knowledge Management Systems in Small Firms", *Electronic Journal of Knowledge Management*, Vol. 8, No., 1, pp. 33-42, 2010.

[6] S. Kharuddin, "Information System and Firms' Performance : The Case of Malaysian Small Medium Enterprises", *International Business Research*, Vol. 3, No. 4, pp. 28-35, 2010.

[7] Z.Z. Abdirahman et al., "The Implementation of a Quality Management Standard in a Food SME : A Network Learning

Perspective", *International Journal on Food System Dynamics*, Vol. 2, No. 3, pp. 214-227, 2013.

[8] W. Rehman, N. Asghar and K. Ahmad, "Impact of Km Practices on Firms ' Performance : A Mediating Role of Business Process Capability and Organizational Learning", *Pakistan Economic and Social Review*, Vol. 53, No. 1, pp. 47-80, 2015.

[9] Uganda MSME Policy, "Uganda Micro, Small and Medium Enterprise (MSME) Policy", Available at: http://mtic.go.ug/2016/index.php?/doc_download/288-msme-policy/.

[10] Oslo Manual, "*Guidelines for Collecting, Reporting and Using Data on Innovation*", The Measurement of Scientific, Technological and Innovation Activities, 2005.

[11] J. Singh and H. Singh, "Kaizen Philosophy: A Review of Literature", *ICFAI Journal of Operations Management*, Vol. 8, pp. 51-72, 2009.

[12] W.I. Zangwill and P.B. Kantor, "Toward a Theory of Continuous Improvement and the Learning Curve", *Management Science*, Vol. 44, No. 7, pp. 910-920, 1998.

[13] T.D.B. Jeronimo and D.D. Medeiros, "The Mature of Strategic Business of Small and Medium-Sized High-Tech Companies in Brazil", *International Journal of Business, Humanities and Technology*, Vol. 2, No. 5, pp. 143-153, 2012.

[14] H.A. Halim et al., "The Growth of Innovative Performance among SMEs : Leveraging on Organisational Culture and Innovative Human Capital", *Journal of Small Business and Entrepreneurship Development*, Vol. 2, No. 1, pp. 107-125, 2014.

[15] Y.R. Kachba et al., "Alignment of Quality Management in SMEs with the Market Performance", *Journal of Technology Management and Innovation*, Vol. 7, No. 4, pp. 103-111, 2012.

[16] A. Honarpour et al., "Knowledge Management , Total Quality Management and Innovation : A New Look", *Journal of Technology Management and Innovation*, Vol. 7, No. 3, pp. 22-31, 2012.

[17] S. Daud, W. Fadzilah and W. Yusoff, "SMEs : The Role of Social Capital as a Mediating", *Proceedings of International Conference on E-Business and* Applications, pp. 135-155, 2010.

[18] O. Branzei and I. Vertinsky, "Strategic Pathways to Product Innovation Capabilities in SMEs", *Journal of Business Venturing*, Vol. 21, No. 1, pp. 75-105, 2014.

[19] D.M. Townsend and L.W. Busenitz, "Exploring the Role of Dynamic Capabilities in Early-Stage Capitalization Processes", *Journal of Business Venturing*, Vol. 30, No. 2, pp. 292-306, 2015.

[20] S.P. Macgregor, J. Arana, I. Parra, M. Pilar and S.P. Macgregor, "Supporting new product creation in Valley in the Mondrago", *European Journal of Innovation Management*, Vol. 9, No. 4, pp. 418-443, 2006.

[21] C. Chen and J. Huang, "Strategic Human Resource Practices and Innovation Performance-The Mediating Role of Knowledge Management Capacity", *Journal of Business Research*, Vol. 62, No. 1, pp. 104-114, 2009.

[22] M. Personal et al., "Virtual Research and Development (R&D) Teams and New Product Development",

International Journal of Physical Science, Vol. 5, No. 7, pp. 916-930, 2010.

[23] H. Hung, "Influence of the Environment on Innovation Performance of TQM", *Total Quality Management and Business Excellence*, Vol. 8, No. 7, pp. 715-730, 2007.

[24] M. Dassisti et al., "HY-CHANGE : A Hybrid Methodology for Continuous Performance Improvement of Manufacturing Processes", *International Journal of Production Research*, Vol. 48, No. 15, pp. 4397-4422, 2010.

[25] O. Jones, "From Maturity to Entrepreneurship : A Stakeholder Model of Innovation", *Creativity and Innovation Management*, Vol. 7, No. 2, pp. 107-114, 1998.

[26] L.F. Lages, "Relationship Capabilities, Quality, and Innovation as Determinants of Export Performance", *Journal of International Marketing*, Vol. 17, No. 4, pp. 47-70, 2009.

[27] L. Raymond, "Enabling the Business Strategy of SMEs Through E-Business Capabilities A Strategic Alignment Perspective", *Industrial Management and Data Systems*, Vol. 108, No. 5, pp. 577-595, 2008.

[28] H. Zhou, "Knowledge Management as a Strategic Tool to Foster Innovativeness of SMEs Report Series", ERIM Report Series, pp. 1-6, 2009.

[29] M. Saunila, "The Relationship between Innovation Capability and Performance: The Moderating effect of Measurement", *International Journal of Productivity and Performance Management*, Vol. 63, pp. 234-249, 2014.

[30] T. Do et al., "Determinants of the Innovation Rent", *International Small Business*, Vol. 23, No. 1, pp. 1-30, 2011.

[31] M. Saunila, "Performance Management through Innovation Capability in SMEs", *International Journal of Productivity and Performance Management*, Vol. 65, No. 2, pp. 162-175, 2016.

[32] O.U. Asikhia et al., "SMEs Wealth Creation Model : A Conceptual Framework", *African Journal of Hospitality, Tourism and Leisure*, Vol. 4, No. 1, pp. 1-19, 2015.

[33] Robert.Saxe and B.A. Weitz, "The SOCO Scale : A Measure of the Customer Orientation of Salespeople", *Journal of Marketing Research*, Vol. 19, No. 3, pp. 343-351,2010.

[34] E. Sadikoglu and H. Olcay, "The Effects of Total Quality Management (TQM) Practices on Performance and the Reasons of and the Barriers to TQM Practices", Vol. 1, No. 35, pp. 65-69, 2014.

[35] C. Bratianu and I. Orzea, "Organizational Knowledge Creation", *Management, Marketing Challenges for Knowledge Society*, Vol. 5, No. 4, pp. 41-62, 2010.

[36] R. Huisman and C. Huurman, "Fat Tails in Power Prices", Available at: https://ideas.repec.org/p/ems/eureri/924.html.

[37] H. Chang and F. Pai, "The Effects of Knowledge Sharing and Absorption on Organizational Innovation Performance-A Dynamic Capabilities Perspective", *Interdisciplinary Journal of Information, Knowledge, and Management*, Vol. 8, pp. 83-97, 2013.

[38] A. Griffin, "PDMA Research on New Product Development Practices: Updating Trends and Benchmarking Best Practices", *Journal of Product Innovation Management*, Vol. 14, No. 6, pp. 429-458, 1997.

[39] V.K. Kumar and E.R. Holman, "Creativity-Styles-Questionnaire-Revised", *Creativity Research Journal*, Vol. 10, No. 1, pp. 51-58, 1997.

[40] A.G. Farinda, "Building Business Networking : A Proposed Framework for Malaysian SMEs", *International Review of Business Research Papers*, Vol. 5, pp. 151-160, 2009.

[41] O.J. Borch, "Dynamic Capabilities Facilitating Innovative Strategies in SMEs", *International Journal of Technoentrepreneurship*, Vol. 1, No. 1, pp. 109-117, 2007.

[42] Catherine L. Wang and P. Ahmed, "Dynamic Capabilities : A Review and Research Agenda Dynamic Capabilities ", *The International Journal of Management Reviews*, Vol. 9, pp. 31-51, 2007.

[43] C.L. Wang, "The Development and Validation of the Organisational Innovativeness Construct Using Confirmatory Factor Analysis", *European Journal of Innovation Management*, Vol. 7, No. 4, pp. 303-313, 2004.

[44] S.E. Krauss, and U. Putra, "Research Paradigms and Meaning Making : A Primer", *The Qualitative Report*, Vol. 10, No. 4, pp. 758-770, 2005.

[45] W.L. Neuman, "*Basics of Social Research; Qualitative and Quantitative Approaches*", 2nd Edition, Pearson Education, 2007.

[46] S. Almalki, "Integrating Quantitative and Qualitative Data in Mixed Methods Research-Challenges and Benefits", *Journal of Education and Learning*, Vol. 5, No. 3, pp. 288-296, 2016.

[47] J.W. Creswell, "*Research Design*", SAGE Publications, 2003.

[48] R.V. Krejcie and D.W. Morgan, "Determining Sample Size for Research Activities", Educational and Psychological Measurement, Vol. 38, No. 3, pp. 607-610, 1970.

[49] J. Ayala-Cruz, "Performance Assessment of an Operations Strategy under Uncertainty Integrating BSC Logic and Monte Carlo Simulation", *International Journal of Management and Organizational Studies*, Vol. 4, No. 3, pp. 1-8, 2015.

[50] P.M. Podsakoff, "Sources of Method Bias in Social Science Research and Recommendations on How to Control It", *Annual Review of Psychology*, Vol. 63, pp. 539-569, 2012.

[51] D.D. Nulty, "The Adequacy of Response Rates to Online and Paper Surveys : What Can Be Done ?", *Assessment and Evaluation in Higher Education*, Vol. 33, No. 3, pp. 301-314, 2008.

[52] M. Vardeman, "*Why Data Cleaning is Important: Debunking the Myth of Robustness*", SAGE Publication, 2003.

[53] J. Bardsley, "A Computational Method for the Restoration of Images with an Unknown, Spatially-Varying Blur", *Optics Express*, Vol. 14, No. 5, pp. 1767-1782, 2006.

[54] A. Field, "*Discovering Statistics Using SPS*", 3rd Edition, SAGE Publication, 2009.

[55] J.V. Petrocelli, "Hierarchical Multiple Regression in Counseling Research: Common Problems and Possible Remedies", *Measurement and Evaluation in Counseling and Development*, Vol. 36, No. 1, pp. 9-22, 2003.

[56] P.A. Frazier et al., "Testing Moderator and Mediator Effects in Counseling Psychology", *Journal of Counseling Psychology*, Vol. 51, No. 1, pp. 115-134, 2004.

[57] R.M. Baron et al., "The Moderator-Mediator Variable Distinction in Social Psychological Research : Conceptual, Strategic, and Statistical Considerations", *Journal of Personality and Social Psychology*, Vol. 51, No. 6, pp. 1173-1182, 1986.

[58] P.E. Jose, "*Doing Statistical Mediation and Moderation*", 3rd Edition, The Guilford Press, 2013.

[59] H. Soltan and B. Vaisi, "Study of the Relationship between Knowldge Manageenent and project Quality managenegt Considering the Key Knowledge Factors in Construction Industry", *Jornal of Applied Sciences*, Vol. 14, No. 21, pp. 2745-2749, 2014.

[60] F.O. Omotayo, "Knowledge Management as an Important Tool in Organisational Management : A Review of Literature", Available at: https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=3330&context=libphilprac.